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EXAMINER

MIAN, OMER S

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/584,106	<b>Applicant(s)</b> DEMACHI ET AL.	
	<b>Examiner</b> OMER MIAN	<b>Art Unit</b> 2416	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 June 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-4,6-11,14,15 and 17-21 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4,6-11,14,15 and 17-21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 01 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>06/22/2006</u> .  | 6) <input type="checkbox"/> Other: _____                          |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. **Claim 1-2, 6, 8-10, and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by ATTAR et al. (US 2004/0179469).**

**Regarding claim 1,** ATTAR discloses a *communication control system for causing a communication station performing communication in accordance with a standard protocol to perform multiplex communication based on time division of a communication band, the communication control system comprising:*

*a time slot assignment section which divides a communication cycle as a basic cycle of time division into time slots, and assigns a set of communication stations and a type of a communication section to each of the time slots (ATTAR: ¶18, time division multiplexing is employed); and*

*a time-division multiplex communication section which performs communication within a period of the time slot in accordance with the set of communication stations and type of communication section assigned by the time slot assignment section (ATTAR: ¶18, time division multiplexing is employed),*

*wherein each communication station is equipped with a timer section and a time-synchronous communication section (ATTAR: ¶135, access terminal and the user terminals are synchronized in time),*

*the type of the communication section includes time-synchronous communication (ATTAR: ¶26, where mode of the type of communication is chosen),*

*the time-synchronous communication section performs time-synchronous communication by using the time slot in which the time-synchronous communication is assigned (ATTAR: ¶20 time-slots assigned to data for communication synchronized in time), and*

*when the time-synchronous communication section transmits a time-synchronous communication frame to each communication station, time of the timer section of each communication station and the time slots of all communication stations are synchronized (ATTAR: ¶135, access terminal and the user terminals are synchronized in time).*

**Regarding claim 2,** ATTAR discloses a *communication control system wherein the set of communication stations is generated by grouping the communication stations based on addresses of the respective communication stations (ATTAR: ¶26, where a subset of users are addressed the broadcasted packets).*

**Regarding claim 6,** ATTAR discloses a *system wherein the communication section is a communication section for performing 1-to-N non-cyclic data communication (where more than one receiver are present), and the communication section includes:*

*a data transmission section for broadcasting data packets to a group address as destinations of a plurality of communication stations (ATTAR: ¶26, where a subset of users are addressed the broadcasted packets); and*

*a data reception section for receiving a transmitted data packet when a destination address of the transmitted data packet is a group address to which the home communication station belongs (ATTAR: ¶26, receiving the data addressed to the first subset by the first subset users).*

**Regarding claim 8,** ATTAR discloses a communications system *wherein the communication section is a communication section for performing 1-to-1 non-cyclic data communication and an immediate-response type communication, and*

*the communication section includes:*

*a data transmission section for transmitting a data packet to a single communication station, and retransmits the data packet in a case where a normal acknowledgment is not returned from a receiving station within a predetermined time (ATTAR: ¶62, ACK channel is used to send positive acknowledgement when the packet was transmitted correctly); and*

*a data reception section for transmitting a normal acknowledgment when a data packet is normally received (ATTAR: ¶62, NACK channel is used to send positive acknowledgement when the packet was transmitted incorrectly allowing retransmission).*

**Regarding claim 9**, ATTAR discloses a communications system *wherein the data transmission section retransmits the data packet independently of the time slot* (ATTAR: ¶62, uses PG channel for ACK/NACK messages).

**Regarding claim 10**, ATTAR discloses a communications system *wherein the data transmission section transmits the normal acknowledgement independently of the time slot* (ATTAR: ¶204, re-transmission does not depend on the current time slot).

**Regarding claim 21**, ATTAR discloses a communications system *wherein the standard protocol is UDP or IP* (ATTAR: ¶22, internet protocol).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

**5. Claims 3-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over ATTAR et al (US 2004/0179469) and WU et al. (US 2003/0110435).**

**Regarding claim 3**, ATTAR discloses a *communication control system as set forth in claim 1 above wherein the type of the communication section includes (ATTAR: ¶26, where mode of the type of communication is chosen).*

ATTAR does not explicitly disclose that *at least one of 1-to-N non-cyclic data communication, 1-to-N cyclic data communication, 1-to-1 non-cyclic data communication and 1-to-1 cyclic data communication.*

However, WU explicitly discloses that *at least one of 1-to-N non-cyclic data communication, 1-to-N cyclic data communication, 1-to-1 non-cyclic data communication and 1-to-1 cyclic data communication (WU: ¶8, where one mode is transmitting ACK and NACK messages based on the packet delivery.).*

A person of ordinary skill in the art working with the invention of ATTAR would have been motivated to use the method of multiple modes of communication of WU as it provides a mechanism to avoid delay in ARQ (WU: ¶8). Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to combine the inventions of ATTAR and WU in order to attain efficient communication system.

**Regarding claim 4**, the already combined teachings of ATTAR and WU, hereinafter A&W, *disclose wherein the 1-to-1 non-cyclic data communication is at least one of an acknowledge type communication which is the 1-to-1 non-cyclic data communication and in which a receiving station returns an acknowledgment to a transmitting station when the receiving station normally receives data(ATTAR: ¶62, ACK*

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channel is used to send positive acknowledgement when the packet was transmitted correctly), and a negative acknowledge type communication which is the 1-to-1 non-cyclic data communication and in which the receiving station returns a negative acknowledgment to the transmitting station when the receiving section cannot receive the data normally (ATTAR: ¶62, NACK channel is used to send positive acknowledgement when the packet was transmitted incorrectly)

**6. Claims 7, 11, 14, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over ATTAR et al. (US 2004/0179469) as applied in claim 1 above in view of HAARSTEN (USPN 6,021,124) further in view of HADZIC et al. (US 20040062278)**

**Regarding claim 7,** ATTAR discloses a system *wherein the communication control system according to claim 1, and the communication section is a communication section for performing 1-to-N cyclic data communication, and*

*the communication section includes:*

*a data transmission section for broadcasting data packets in a fixed cycle to a group address as destinations of a plurality of communication stations (ATTAR: ¶26, where a subset of users are addressed the broadcasted packets);*

*a plurality of receive buffers (ATTAR: ¶45 and ¶130, where queues exist at the reception and the transmission);*

ATTAR does not explicitly disclose that,

*a packet reception section which attaches the reception time to the received data packet and sequentially stores the data packet one by one into the plurality of receive*



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*buffers when a destination address of the received data packet is a group address to which the home communication station belongs ; and*

*a receive buffer reading section which reads the data packet from the receive buffer having the latest reception time among the plurality of receive buffers, completes readout in a period shorter than the cycle of the broadcasting, and sends the data packet to a higher-level side.*

However HAARSTEN expressly disclose *a packet reception section which sequentially stores the data packet one by one into the plurality of receive buffers when a destination address of the received data packet is a group address to which the home communication station belongs (HAARSTEN: col. 3 lines 3-20, go-back-n ARQ is employed data packet is stored and records corresponding time); and*

*a receive buffer reading section which reads the data packet from the receive buffer having the latest reception time among the plurality of receive buffers, completes readout in a period shorter than the cycle of the broadcasting, and sends the data packet to a higher-level side (HAARSTEN: col. 3 lines 3-20, go-back-n ARQ is employed where it is the buffer length is kept shorter than the maximum round trip delay).*

The already combined teachings of ATTAR and HAARSTEN, herein after A&H, does not explicitly disclose *attaching the reception time to the received data packet and buffer storing reception time of a received data packet and the data packet as a pair.*

However, HADZIC explicitly discloses *attaching the reception time to the received data packet and buffer storing reception time of a received data packet and the data packet as a pair* (HADZIC, ¶59, receiver adds time stamp)

A person of ordinary skill in the art working with the invention of A&H would have been motivated to use the method employing time stamp attaching method of HADZIC as it provides a higher data co-ordination hence increasing efficient use of communication resources. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to combine the inventions of A&H and HADZIC in order to attain a better performing communication system.

**Regarding claim 11**, ATTAR discloses a communications system *wherein the communication section is a communication section for performing 1-to-1 non-cyclic data communication and a negative acknowledge type communication as set forth in claim 1 above*,

ATTAR does not explicitly disclose that *the communication section includes:*  
*a data transmission section for transmitting a data packet with a sequence number being attached, the sequence number being changed for each transmission;*  
*and*

*a data reception section which checks a sequence number being attached to a data packet each time the data packet is received, and transmits a negative acknowledgment packet to a transmitting station when detecting a lost sequence number as a result of checking,*

*wherein the data reception section attaches a sequence number specifying the data packet that is received normally at the latest to the negative acknowledgment packet,*

*when the data transmission section receives the negative acknowledgment packet, the data transmission section sequentially retransmits data packets starting with an undelivered data packet being specified by the sequence number attached to the negative acknowledgment packet,*

*when the data transmission section does not transmit a subsequent data packet for a predetermined time on completion of the transmission of the data packets, the data transmission section transmits a delivery acknowledgment packet to a receiving station, and when a sequence number specified by a returned acknowledgment packet does not indicate the last transmitted data packet, the data transmission section sequentially retransmits data packets starting with an undelivered data packet specified by the returned acknowledgment packet, and*

*when the data reception section receives the delivery acknowledgment packet, the data reception section returns to the transmitting station an acknowledgment packet to which a sequence number specifying the last received data packet is attached.*

However, HAARSTEN explicitly discloses a system where *the communication section includes:*

*a data transmission section for transmitting a data packet with a sequence number being attached, the sequence number being changed for each transmission (HAARSTEN: col. 3 lines 1-20 and col. 8 lines 26-36, Go-Back-N ARQ is used); and*

*a data reception section which checks a sequence number being attached to a data packet each time the data packet is received, and transmits a negative acknowledgment packet to a transmitting station when detecting a lost sequence number as a result of checking (HAARSTEN: col. 3 lines 1-20 and col. 8 lines 26-36, Go-Back-N ARQ is used),*

*wherein the data reception section attaches a sequence number specifying the data packet that is received normally at the latest to the negative acknowledgment packet (HAARSTEN: col. 3 lines 1-20 and col. 8 lines 26-36, Go-Back-N ARQ is used),*

*when the data transmission section receives the negative acknowledgment packet, the data transmission section sequentially retransmits data packets starting with an undelivered data packet being specified by the sequence number attached to the negative acknowledgment packet (HAARSTEN: col. 3 lines 1-20 and col. 8 lines 26-36, Go-Back-N ARQ is used),*

*when the data transmission section does not transmit a subsequent data packet for a predetermined time on completion of the transmission of the data packets, the data transmission section transmits a delivery acknowledgment packet to a receiving station, and when a sequence number specified by a returned acknowledgment packet does not indicate the last transmitted data packet, the data transmission section sequentially retransmits data packets starting with an undelivered data packet specified by the returned acknowledgment packet (HAARSTEN: col. 3 lines 1-20 and col. 8 lines 26-36, Go-Back-N ARQ is used), and*

*when the data reception section receives the delivery acknowledgment packet, the data reception section returns to the transmitting station an acknowledgment packet to which a sequence number specifying the last received data packet is attached*(HAARSTEN: col. 3 lines 1-20 and col. 8 lines 26-36, Go-Back-N ARQ is used).

A person of ordinary skill in the art working with the invention of ATTAR would have been motivated to use the method employing Go-Back-N ARQ of HAARSTEN as it provides a higher throughput for the system (HAARSTEN: col. 3, lines 1-20). Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to combine the inventions of ATTAR and HAARSTEN in order to attain a better performing communication system.

**Regarding claim 14,** A&H discloses a communications system *wherein the data reception section performs transmission of the negative acknowledgment packet and the acknowledgment packet independently of the time slot* (ATTAR: ¶62, uses PG channel for ACK/NACK messages).

**Regarding claim 15,** ATTAR discloses a communications system *wherein the communication section is a communication section for performing 1-to-1 cyclic data communication as set forth in claim 1 above where the communication section includes a transmission requesting section for requesting cyclic transmission of a data packet addressed to a specified communication station by a start request packet, based on a data acquisition request* (ATTAR: ¶42, a data transmission request is made) and *when receiving the start request packet, starts transmission of a data packet being specified by the start request packet to a communication station of a requesting source in a cycle*

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*specified by the start request packet (ATTAR: ¶42, transmission starts the transmission cycle as specified by the request), and;*

*ATTAR does not explicitly disclose that the communication section includes:*

*a halt requesting section for requesting a halt of cyclic transmission of the data packet by a halt request packet;*

*halts transmission of the data packet on receiving a halt request packet; and a data reception section for receiving the data packet;*

*wherein the data reception section includes:*

*a plurality of receive buffers each of which stores reception time of the received data packet and the data packet as a pair;*

*a packet reception section which attaches the reception time to the received data packet and sequentially stores the data packet one by one into the plurality of receive buffers; and*

*a receive buffer reading section which reads the data packet from the receive buffer having the latest reception time among the plurality of receive buffers, completes readout in a period shorter than the cycle specified by the start request packet, and sends the data packet to a higher-level side.*

*However, HAARSTEN explicitly discloses that the communication section includes:*

*a halt requesting section for requesting a halt of cyclic transmission of the data packet by a halt request packet (HAARSTEN: col. 9, lines 8-43, buffer is empty and source buffer is full halts the transmission);*

*halts transmission of the data packet on receiving a halt request packet; and a data reception section for receiving the data packet (HAARSTEN: Fig. 5 A and 5B, col. 9, lines 8-43, buffer is empty and source buffer is full halts the transmission);*

*wherein the data reception section includes:*

*a plurality of receive buffers each of which stores reception time of the received data packet and the data packet as a pair (HAARSTEN: col. 3 lines 3-20, go-back-n ARQ is employed where a time of recorded and compared to delay) ;*

*a packet reception section which sequentially stores the data packet one by one into the plurality of receive buffers (HAARSTEN: col. 3 lines 3-20, go-back-n ARQ is employed data packet is stored and records corresponding time); and*

*a receive buffer reading section which reads the data packet from the receive buffer having the latest reception time among the plurality of receive buffers, completes readout in a period shorter than the cycle specified by the start request packet, and sends the data packet to a higher-level side (HAARSTEN: col. 3 lines 3-20, go-back-n ARQ is employed where it is the buffer length is kept shorter than the maximum round trip delay)*

A person of ordinary skill in the art working with the invention of ATTAR would have been motivated to use the method employing Go-Back-N ARQ as it provides a higher throughput for the system (HAARSTEN: col. 3, lines 1-20). Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to combine the inventions of ATTAR and HAARSTEN in order to attain a better performing communication system.

The already combined teachings of ATTAR and HAARSTEN, herein after A&H, does not explicitly disclose *attaching the reception time to the received data packet*.

However, HADZIC explicitly discloses *attaching a time stamp to the received data packet* (HADZIC, ¶59, receiver adds time stamp)

A person of ordinary skill in the art working with the invention of A&H would have been motivated to use the method employing time stamp attaching method of HADZIC as it provides a higher data co-ordination hence increasing efficient use of communication resources. Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to combine the inventions of A&H and HADZIC in order to attain a better performing communication system.

**7. Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over ATTAR et al. (US 2004/0179469) as applied in claim 1 above in view of YONG et al. (USPN 5, 541,919)**

**Regarding claim 17,** ATTAR discloses a communications system *wherein performs time-division multiplex communication by using the time slots as set forth in claim 1 above where the communication control system comprises:*

*A plurality of reception queue and a plurality of transmission queue constitutes a queue of reception and transmission packets* (ATTAR: ¶45 and ¶130, where queues exist at the reception and the transmission)

ATTAR does not explicitly disclose that *the queue sections is provided for each type of communication;*



*a transmission section for transmitting packets in the plurality of transmission queue sections in accordance with a predetermined priority order with priority information corresponding to the transmission queue section being attached;*

*a reception section for distributing and storing received packets in the plurality of reception queue sections in accordance with the priority information; and*

*a reading section which reads data stored in the plurality of reception queue sections in accordance with a predetermined priority order, and sends the data to a higher-level side.*

However, YONG expressly discloses that *the queue sections are provided for each type of communication* (YONG: Fig. 9 , and col. 2, lines 53-64, plurality of buffers are for different services);

*a transmission section for transmitting packets in the plurality of transmission queue sections in accordance with a predetermined priority order with priority information corresponding to the transmission queue section being attached* (YONG: col. 2 line 65 - col. 3, line 26, where based on priority the packets are multiplexed for transmission);

*a reception section for distributing and storing received packets in the plurality of reception queue sections in accordance with the priority information* (YONG: col. 4 lines 20-58, queue sections in accordance with the priority ); *and*

*a reading section which reads data stored in the plurality of reception queue sections in accordance with a predetermined priority order, and sends the data to a*

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*higher-level side* (YONG: col. 4 lines 20-58, queue sections in accordance with the priority and transmit data).

*plurality of reception queue sections which exists between predetermined layers of the OSI layer model, is provided for each type of the* (YONG: Fig. 2, queues exist between data link and network)

A person of ordinary skill in the art working with the invention of ATTAR would have been motivated to use the method employing queuing technique of YONG as it provides a a good trade off between efficiency and delay (YONG: col. 2 lines 3-10). Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to combine the inventions of ATTAR and YONG in order to attain a better performing communication system.

**Regarding claim 18,** The already combined teachings of ATTAR and YONG, hereinafter A&Y, discloses a communications system *wherein the transmission section executes transmission processing of specific transmission queue section among the plurality of transmission queue sections in a case where data does not exist in the transmission queue section that has higher priority over the specific transmission queue section* (YONG: col. 4 lines 20-58, a buffer is served when a priority higher buffer is empty).

**Regarding claim 19,** A&Y discloses a communications system *wherein the reading section executes reading processing of specific reception queue section among the plurality of reception queue sections in a case where data does not exists in the reception queue section that has higher priority over the specific reception queue*

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*section* (YONG: col. 4 lines 20-58, a buffer is served when a priority higher buffer is empty).

**Regarding claim 20**, A&Y discloses a communications system *wherein the transmission queue section and the reception queue section exist between a second layer and a third layer of an OSI layer model* (YONG: Fig. 2, queues exist between data link and network).

### **Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to OMER MIAN whose telephone number is (571)270-7524. The examiner can normally be reached on Monday-Thursday 8:30am-6pm and Fridays 8:30am-12:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, HUY VU can be reached on (571)272-3155. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/O. M./

Examiner, Art Unit 2416

*/Huy D. Vu/*

*Supervisory Patent Examiner, Art Unit 2416*